

REMARKS

Claims 1-19 are pending in the application. Claims 2-5, 7-13, 15 and 16 are withdrawn from consideration and claims 1, 6, 14 and 17-19 are rejected.

Claims 1, 6, and 17 are amended to recite ranges not disclosed in the asserted references. Specifically, the specific surface area in the amended claims is recited as 28 to about 200 m²/g, and the specific surface area diameter D_p of primary particles defined by formula (II) is about 10 to 50 nm. Support for these amendments is provided in Example 4 on pages 22-23 of the specification. In addition, claims 18 and 19 have been amended to omit the phrase “the specific surface area is about 10 to about 200 m²/g.” No new matter is added.

Applicants present this amendment in response to the Examiner's rejection. As a result of the amendment, all pending claims are now in condition for allowance. No new search is required, and Applicants therefore request that this amendment be entered.

Claims 1, 6, 14 and 17-19 are rejected under 35 U.S.C. § 102(b)/103(a) as anticipated by or, in the alternative, obvious over JP '710 and Matsushita (U.S. Patent 4,898,843).

With respect to JP '710, it is asserted that the product of JP '710 appears substantially identical to that of the present invention. In addition, JP '710 is asserted to disclose a BET surface area of 8.5 in Example 2, which is argued to be within the scope of “about 10-200” because of the word “about.”

With respect to Matsushita, it is asserted that the claimed average (secondary) particle size, crystalline (primary) particle size and specific surface area are taught in

Examples 1, 3 and 5.

Applicants have amended claim 1 to replace the lower limit “about 10” with “28” so that the disclosed surface area of 8.5 m²/g is not within the scope of the range of 28 to about 200 m²/g of the amended claim. Claims 6 and 17 have been similarly amended to recite a range that is not disclosed.

With respect to claims 6 and 17, the particles of JP ‘710 and the present invention are different. JP ‘710 does not appear to disclose the use of a titanium oxide particle comprising crystalline brookite or subjecting titanate to hydrolysis. Thus, the process of claims 6 and 17 yield a product that is different from the product obtained when the process of JP ‘710 is used. Therefore, one of skill in the art would not find Applicants’ invention disclosed or obvious from reading the closest specific embodiment of JP ‘710. The present invention possesses different properties from a product made by a different process, and therefore, the present invention is neither taught nor suggested. For at least these reasons, Applicants respectfully submit that the amended claims are patentable and therefore request that this rejection be withdrawn.

Matsushita is asserted to disclose barium titanate powder with a specific surface area which is 20 m²/g or less and a particle size of 0.07 to 0.5 μm.

In contrast, Applicants have amended claim 1 to replace the lower limit “about 10” with “28” so that the disclosed surface area of 20 m²/g or less is not within the scope of the range of 28 to about 200 m²/g of the amended claim. As noted above, claims 6 and 17 have been similarly amended to recite a range that is not disclosed.

In the present invention, the primary particles agglomerate to form secondary particles. Matsushita does not disclose secondary particles since the powder is non-

agglomerating. That is, secondary particles would not be formed.

Accordingly, Matsushita does not disclose secondary particles or a ratio of D_2/D_1 , and therefore Matsushita does not teach or suggest the present invention.

With respect to claims 6 and 17, Matsushita does not appear to disclose the use of a titanium oxide particle comprising brookite or subjecting titanate to hydrolysis to obtain perovskite oxide particles. The process of claims 6 and 17 yield a product that is different from the process disclosed in Matsushita, and therefore the present invention is neither disclosed nor suggested. Therefore, Applicants respectfully request that the present rejection be reconsidered and withdrawn.

Claims 1, 6 and 17-19 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Lilley. It is asserted that Lilley teaches the claimed mean or average (secondary) particle size at col. 5; the primary particle size in the Table at cols. 7 and 8, and the specific surface area at col. 5 and in the Table at cols. 7 and 8.

As amended, claims 1, 6 and 17-19 recite surface areas and specific surface area diameters not disclosed by Lilley. Specifically, Lilley neither teaches nor suggests a specific surface area within the range of 28 to about 200 m²/g. Further, Lilley neither teaches nor suggests the specific surface area diameter (D_1) of primary particles defined by formula (II), which is about 10 to 50 nm in the amended claims. Because this is clearly distinct from the asserted reference, Applicants respectfully request that the rejection be reconsidered and withdrawn.

Claims 6 and 18 are rejected under 35 U.S.C. § 103(a) as unpatentable over JP 6-305729 (JP '729"), JP 11-228139 ("JP '139") or JP 7-069635 ("JP ' 635").

With respect to JP '729 and JP '635, the Examiner asserts that the present invention does not exclude the presence of SO_3 .

With respect to JP '139, it is asserted that the claims and disclosure are broader in scope than the provisional application because the present application uses the word "about" in the recitation of all the numerical ranges, which is not disclosed in the provisional application.

In this regard, the provisional application contains two figures, which depict photomicrographs of the approximate ranges of the recited claims. Thus, even if the word "about" does not appear in the text of the provisional application, one of ordinary skill would have understood Applicants to be in possession of an invention with the recited ranges, due to the depictions in the figures of the provisional application. Therefore, the provisional application supports the rejected claims, which are entitled to an effective filing date of May 26, 1999 (filing of the provisional application), and therefore JP '139 is not a proper reference. Accordingly, Applicants request that it be removed.

With respect to JP '729 and JP '635, the presence of SO_3 is excluded from claim 6. Claims 6 and 17 recite a step of removing a dispersion medium from a sol in which a perovskite titanium containing composite oxide particle is represented by $\text{M}(\text{TiO}_3)$, and therefore, the resulting particle is represented by $\text{M}(\text{TiO}_3)$, which excludes the presence of SO_3 . However, to expedite allowance, Applicants submit the present amendment further distinguishing the claimed invention. Thus, in claims 6 and 17, Applicants have inserted --represented by general formula (I)-- after "A perovskite titanium-containing composite oxide particle" and have changed "a perovskite titanium-containing composite oxide

AMENDMENT UNDER 37 C.F.R. § 1.116
U.S. Application No.: 09/579,708

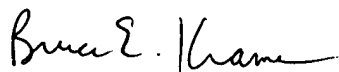
particle" to "the perovskite titanium-containing composite oxide particle" in the body of these claims. Thus, the particles of the amended claims are different from those of JP '729 and JP '635.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,

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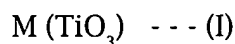
Date: April 23, 2002

APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

1. (Twice Amended) A perovskite titanium-containing composite oxide particle having a composition represented by general formula (I), wherein the specific surface area is 28 [about 10] to about 200 m²/g, the specific surface area diameter D_1 of primary particles defined by formula (II) is about 10 to 50 nm, [about 100 nm,] and a D_2/D_1 ratio of the average particle size D_2 of secondary particles to D_1 is about 1 to about 10:

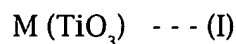


wherein M is at least one of Ca, Sr, Ba, Pb, or Mg,

$$D_1 = 6 / \rho S \quad - - - (II)$$

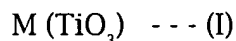
wherein ρ is the density of the particles, and S is the specific surface area of the particles.

6. (Twice Amended) A perovskite titanium-containing composite oxide particle represented by general formula (I), wherein the specific surface area is 28 to about 200 m²/g, obtained by removing a dispersion medium from a sol in which [a] the perovskite titanium-containing composite oxide particle [represented by general formula (I)] is dispersed, wherein said sol is obtained by a process comprising the step of allowing a titanium oxide particle comprising brookite crystalline form to react with a metal salt comprising at least one of Ca, Sr, Ba, Pb, or Mg in a liquid phase:



wherein M is at least one of Ca, Sr, Ba, Pb, or Mg.

17. (Amended) A perovskite titanium-containing composite oxide particle represented by general formula (I), wherein the specific surface area is 28 to about 200 m²/g, obtained by removing a dispersion medium from a sol [obtained by a process] in which [a] the perovskite titanium-containing composite oxide particle [represented by general formula (I)] is dispersed, wherein said sol is obtained by a process comprising the step of allowing a titanium oxide sol prepared by subjecting a titanium salt to hydrolysis in an acid solution to react with a metal salt comprising at least one of Ca, Sr, Ba, Pb, or Mg in a liquid phase:



wherein M is at least one of Ca, Sr, Ba, Pb, or Mg.

18. (Amended) The perovskite titanium-containing composite oxide particle as claimed in claim 6, wherein [the specific surface area is about 10 to about 200 m²/g,] the specific surface area diameter D_1 of primary particles defined by formula (II) is about 10 to about 100 nm, and a D_2/D_1 ratio of the average particle size D_2 of secondary particles to D_1 is about 1 to about 10:

$$D_1 = 6 / \rho S \quad \text{--- (II)}$$

wherein ρ is the density of the particles, and S is the specific surface area of the particles.

19. (Amended) The perovskite titanium-containing composite oxide particle as claimed in claim 17, wherein [the specific surface area is about 10 to about 200 m²/g,] the specific surface area diameter D_1 of primary particles defined by formula (II) is about 10 to about 100 nm, and a D_2/D_1 ratio of the average particle size D_2 of secondary particles to D_1 is about 1 to about 10:

$$D_1 = 6 / \rho S \text{ --- (II)}$$

wherein ρ is the density of the particles, and S is the specific surface area of the particles.